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Electricity on the Farm

November 1927

ELECTRICITY AND COOKING

See page 8

Friendly Light

A FAMILIAR scene—the lamp of welcome. But on half a million farms the same welcome is extended at the touch of an electric switch—with a flood of light both indoors and out.

The hours mother spent on the lamps belong to the family now. Properly shaded lights give the best illumination that science can devise.

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This monogram on MAZDA lamps, Wiring Systems, and motors that run household and farm equipment, insures lasting safety and convenience in both house and barn. It is a guarantee of the endurance and adaptability that General Electric builds into all of its products.

GENERAL ELECTRIC

"I make hens lay in December"

More eggs—Higher prices

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Whether you want the light in the morning, in the evening, or both, a Tork Clock will control it properly every day, with no attention on your part. Tork Clocks are standard for any voltage, they are easy to wind once a week, and simple to install and set.

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Capacity up to 15 amperes—250 Volts.
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TORK COMPANY
12 East 41st St., New York

Electricity on the Farm

Vol. 1 NOVEMBER 1927 No. 5

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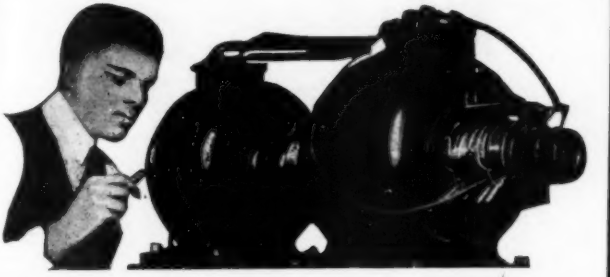

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Westinghouse Dreamed Electrical Farm Equipment

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Westinghouse motors and labor-saving appliances take on the cleaning, washing, and similar back-breaking jobs that mother always had to do, while other handy little Westinghouse motors make light work of grinding feed, milking, keeping food cool, pumping water, sawing, or cleaning the barn for you.

If an electric line goes past your place, or if one is coming out that way, ask your electric power company to tell you how to make the most of it with Westinghouse electrical equipment. They'll show you how this puts money in your pocket by saving your time and increasing the amount of work you can do.

WESTINGHOUSE ELECTRIC & MFG. COMPANY
Offices in all Principal Cities : Representatives Everywhere

Westinghouse

Electricity on the Farm

Vol. 1 NOVEMBER 1927 No. 5

THANKSGIVING SEASON is here again to remind us that we have a lot to be thankful for.

Our Pilgrim forefathers set aside that day as a day of thanksgiving to the Creator for their deliverance from oppression and for their prosperity in fruits of the soil.

Likewise we have much to acknowledge. Electricity on the farm has delivered the farm home from the drudgery and the gloom which existed prior to the advent of the introduction of electric current. Now the old homestead is as comfortable and attractive as that in the city; the farm building and yards are no longer veiled by the blackness of night; and the young people are beginning to be satisfied with farm work — lightened by electric lights and power.

No single development has contributed so much to the comfort and happiness on the modern farm as the advent of electric power. It has turned the farm home into a happy home; it has made the farm attractive to the young people; it has made the life of the farm woman endurable, and it has placed in the hands of the farmer a means by which he can solve many of the troublesome hired help problems.

Indeed, the farmer who has been fortunate enough to receive central station service during the past year has something to be thoroughly thankful for. And from now on through the winter months when the evenings are long the benefits of electrical service will show at their best.

The Electric Toaster and Electric Coffee Percolator Save Many Steps in Preparing a Light Breakfast, to Say Nothing of the Excellent Products Secured by the Use of These Two Popular Appliances.

"If Only People Didn't Eat"

BY CLARA ECKSTRAND

HOW many times have you heard that expression from the tired housekeeper? The getting of meals is, without question, the greatest drudge around the farm household—that is, where modern equipment is not available.

There is no let-up to the demands of the kitchen. Three times a day must the housekeeper be ready with food to satisfy the husky appetites of those on the farm. No sooner is one meal out of the way than another must be planned.

With the old coal or wood stove, constant supervision of bread, cake, or other eatables in the oven is necessary.

Work Without Supervision

And right here is where the electric range is making most friends among the farm women. It is able to maintain a uniform temperature and to automatically cut off the heat when the food in the oven is done. It is only necessary to know how long it takes to properly cook the particular article of food and set the range to cut off the current at the termination of this period.

Then, too, other electrified appliances save many steps around the kitchen and dining room. For instance, the electric coffee percolator, and the electric toaster make it possible to prepare these foods right on the table where they are wanted.

Baking Is a Simple Matter in the Electric Range. The Remarkable Temperature Control as Well as the Automatic Cut-out Prevent Many Scorched or Burned Meals.

The women on modern electrified farms have much to be thankful for at this season of the year, and, not the least, for the many electrified appliances which are doing so much to reduce the work incidental to the preparation of meals.

Ohm—the measure of electrical resistance, is named for George Simon Ohm, the German discoverer of Ohm's law.

* * *

Volt—is named after Alessandro Volta, the Italian who discovered the voltaic pile.

Spray Irrigation in the Eastern States

The Eastern States are subject to droughts of more or less severity which damage all growing crops, but especially such truck crops as lettuce, strawberries and potatoes which are materially injured by short periods without rain. To safeguard these crops from drought it is often feasible to install irrigation systems to provide a water supply to supplement the rainfall. The most common method of applying water to crops in the humid region is known as spray irrigation. Information regarding this method is contained in Farmers' Bulletin 1529-F, "Spray Irrigation in the Eastern States," just issued by the United States Department of Agriculture.

Effect of Spray

Spray irrigation puts the water on the crops in the form of very fine drops or mist closely resembling a gentle rain. This system consists essentially of parallel lines of pipe about 50 feet apart usually supported on rows of posts 6½ feet high, each line of pipe being equipped with small nozzles spaced 3 or 4 feet apart. The line is constructed so that the pipe may be revolved, thus permitting the entire width between nozzle lines to be watered uniformly. There are a

(*Continued on page* 48)

Mr. Lewis Reitz, Lewisburg, Pa., Has His Farm Fully Equipped With Electricity. Here Is His Potato Grader at Work. He Has a Milking Machine, Automatic Water System, Lights All Over His Place, Automatic Waterer for His Hogs. In Fact, He Said He Can Save Expensive Labor With Cheap Electric Service. He Is One of the Most Successful Farmers of Buffalo Valley.

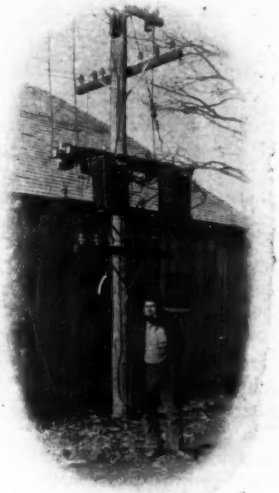
Electricity Saves Money

Replaces the Hired Man and the Hired Girl As Well; Rural Service Extending Rapidly.

By R. U. BLASINGAME

PENNSYLVANIA is a comparatively mountainous state and large farms are the exception rather than the rule. It might seem from this that the tendency toward small farms would check the general use of electricity by farmers. This, on the contrary, has been found to be otherwise. Electric lines are being rapidly extended throughout Pennsylvania and that state promises to be one of the leaders in electrified farms despite the fact that there are so many small farms. Professor R. U. Blasingame, of the Pennsylvania State College has been very active in the field of rural electrification and in the following article he describes the effect of the movement in his state:

Over one and a half millions of dollars were spent in the con-



Mr. M. N. Bushong, a Progressive Farmer in Pennsylvania, was one of the First to Recognize the Value of Electric Current. He Built His Own Electric Line from the Power Company's Line to His Farm Several Years Ago—Long Before most of the Present-day Farm Users of Electricity Fully Realized Its Value.

nnsylvania Farmers

struction of rural electric lines in Pennsylvania from April first to August first, 1927. This shows without question that the farmers of the State want electric service. It indicates, too, that the electrical industry in the Commonwealth intends to serve the rural population. There exists a fine spirit of co-operation between farmers of the State and the electrical industry.

Farmers Co-operate

There has been formed a "Pennsylvania Joint Committee on Rural Electrification" with Mr. John M. McKee, Executive Secretary. His office is 707 Telegraph Building, Harrisburg, Pennsylvania. Mr. McKee was, for a good many years, county agricultural agent in Washington county, and Deputy Secretary of Agriculture during the Pinchot administration. In addition to this wide experience and acquaintance with Pennsylvania agriculture, McKee was raised on a farm in the State. He is peculiarly and admirably fitted for the job of Executive Secretary, having had considerable executive responsibility during the past administration.

The Joint Committee on Rural Electrification is made up of nine members, representatives

of the State Council of Agricultural Associations, and ten members of the Pennsylvania Electric Association. This group agreed upon General Order No. 28, covering the extension of rural electric lines. This publication was issued by the Public Service Commission January 25, 1927. The writer has attended several of the meetings of this committee and they work together in fine spirit for the advancement of rural electrification in Pennsylvania.

Two representatives of the Agricultural Council, prominent and practical farmers, were delegated to call on the Director of The Pennsylvania Agricultural Experiment Station and ask that a rural electrification research project be inaugurated. These farmers were well received and it is hoped to begin the work, under the supervision of the Farm Machinery Department, at an early date.

High Cost of Labor

There are very definite reasons behind the organization of this Joint Committee and the need for electrical service on the farms of Pennsylvania. The cost of "Power" and "Labor" on the farms of the State amounts to from about 50 to 70 per cent of the total cost of production of agricultural products. In some cases the cost for power and labor runs even higher. We have definite figures over a period since 1920 on several hundred farms which show these costs. The farmers themselves are keeping the records. These figures show horse labor to be worth 20 cents per hour and man labor 30 cents.

Low Value of Labor

This puts a premium of only 10 cents per hour for the intelligence of mankind. No doubt the low production cost of man power is due in a large degree to the tools with which he works. Farmers realize that they must reduce production costs, and this is one of the reasons they are so intensely interested in securing electric current. Not only is labor increasing in price but it is becoming scarce.

The writer installed a meter on Mr. Brubaker's potato grader in the fall of 1924. He graded 700 bushels of potatoes requiring only one kilowatt of electrical energy during September. In October he graded 1,300 bushels consuming two kilowatts. Mr. Brubaker said that this half horsepower motor saved the hiring of a man.

Take, for example, Mr. Levi H. Brubaker, Lancaster, Pennsylvania, R. F. D. 8. His home, as well as his barn, is well-equipped with electrically driven machinery. The writer installed a meter on Mr. Brubaker's potato grader in the fall of 1924. He graded 700 bushels of potatoes requiring only 1 kwh. of electrical energy during September. In October he graded 1300 bushels consuming 2 kwh. Mr. Brubaker said that this half horse power motor saved the hiring of a man. Mr. Brubaker has divided his farm into two equal portions, operating each as a separate unit and on a distinct rotation, in order to save labor. The two rotations are: 1. Potatoes, wheat and alfalfa; 2. Tobacco, wheat and corn. In this way he can work his 133-acre farm with three hired men and keep them busy the year around and not have to hire extra men at any time. He states that his grandmother had two servants, his mother had one, but he is unable to secure satisfactory domestic help for his wife; therefore, he has turned to electrical equipment for the home.

Replaces the Hired Girl

He states further that the use of electricity in his home not only saves the cost and annoyance of a maid, is cheaper, but releases him and the farm help from household chores and consequently aids him in giving his whole time to the farm operations.

A list of his equipment follows: Electric range, washing machine, simplex ironer, two pneumatic water systems, one for soft water and one for the deep well, electric fan, toaster, percolator, motor for threshing and silo filling, utility motor, potato grader and lights in the house, barn, yard, implement shed, work shop and garage.

The Dale Farm near State College, Pa., is supplied with electric current. Mrs. Dale finds the electric range and water system great aides to her work. The only attention the water system needs is an occasional Oiling which Mrs. Dale never overlooks, as is shown in the above illustration.

Saving in Insurance

This man says that the difference in insurance helps to pay for the electrical apparatus. He states further that the house work goes on easier, better and cheaper with these appliances than previously with hired help in the home.

Mr. Brubaker is not a wealthy man. He works along with his

help most of the time and by using efficient methods and equipment he has made good.

Why Electric Service Must Come

Many other farmers like Mr. Brubaker realize that about two millions more people live in Pennsylvania than in Canada. They know that about two-thirds, or six millions, of these people live in the villages, towns and cities of the State, and work in the industries and mines. They must be fed three times a day. This makes one of the finest markets in the world for agricultural products. The land is good, producing as much and more per acre than some of the middle western States. These factors stimulate agricultural production. But the industries compete for labor. This fact is advancing the use of labor saving devices very rapidly.

Another factor which will aid the extension of rural electric service is the fact that the State contains numerous hamlets, villages, towns and cities. These are all supplied with electric service and thus, to reach the surrounding farming territory, line extensions, in many cases, need not be very long.

A Farm With One Horse

Mr. Nelson Poorbaugh, who lives near Mt. Pleasant, Pennsylvania, operates an 125-acre farm, using only one horse. This horse pulls the milk wagon. He states that the in-

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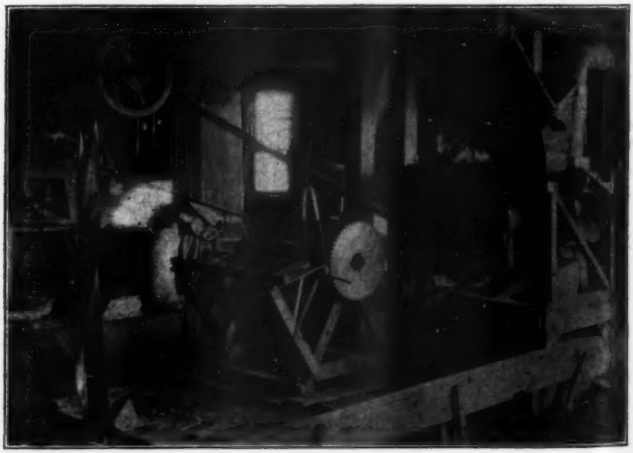


Mr. M. N. Bushong, Columbia, Pa., Built His Own Electric Line Some Years Ago. He Does Everything He Can Do On His Farm With Electric Current. Here Is Shown His Workshop and Feed Room. He Is One of the Most Successful Dairymen in His Section.

Gathering Onion Sets for Transplanting at the Taylor Farm, Winter Garden District.

Electricity for Irrigation

Has Become Popular in Shallow Water District of Texas; Revolutionizing Farming Methods.

By J. E. WAGGONER,
Research Agricultural Engineer,
Agricultural and Mechanical College of Texas.

IRRIGATION by electric power has been long recognized on the Pacific Coast as an economical practice. Fertile land which would not otherwise produce, due to the absence of surface streams for irrigation, had been made productive by electrically driven pumps.

While some of these pumps raise water from great depths, the majority of them are faced with a comparatively low lift. Although irrigation from subterranean waters may never be general throughout the country, it is beginning to exert its influence now in another section of the United States—in Texas. In the following article by Mr. J. E. Waggoner, Research Agricultural Engineer of the Texas Agricultural and Mechanical College, Mr. Waggoner describes the experience of Texas farmers with electrically operated pumps.

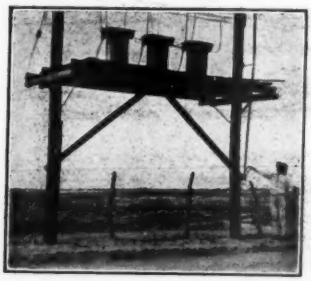
Out in West and Southwest Texas where nature was kind in supplying a great abundance of good water close to the surface of the ground, the farmers are

rapidly turning to electric power for pumping. The use of electric power is comparatively new. Two years ago the first motors were installed They were put on test. Many of the farmers were "Doubting Thomases." They said, "We will watch them work and then make up our minds what to do."

Big Power Increase

To make a long story short they came, saw and were convinced—converted themselves to the use of electricity. That was two short years ago. What is the story now? More than 1200 horse power in motors ranging from 5 to 60 h. p. sizes lift the life giving water to the surface, where it flows out across that fertle soil transforming barren waste into the garden spot of the Southwest.

The plans for immediate expansion includes the installation of upwards of 2000 h. p. The utility officials say that the requests for extensions for irrigation pumping are coming in so fast that they can't take care of them. Within a year they expect to have built close to 62 miles of new rural extensions.



Transformer Installations Like This Are Common in the Irrigated Section.

An Economical Practice

There is a real fundamental economical side to this development that all concerned are cognizant of. The country is fertile, the development of agriculture is sound and the kind of use for the electrical energy develops sufficient load to make the extension of lines possible.

The type of farming is intensive enough to make it a paying investment for the farmers to use large amounts of electrical energy and the rate for current tends to decrease as the consumption increases giving the farmer more for his money. The use of the electrical energy for home lighting in the country can be classified as not a heavy load.

Electric Power Most Satisfactory

Going a little deeper into the situation it is easy to see why these farmers are adopting the electrical motor as their prime mover. There is a definite dependability! It is all important! The power company has connected up high tension lines to various generating plants, local stand-by-plants are ready to operate on a moment's notice. There is a positive certainty as nearly so as human beings can make it, that when the farmer throws the switch he gets the power he needs.

How important is this de-

A 60 Horsepower Motor Throws a Large Stream of Water.

pendability? It is all important! Here is the situation. A crop of high priced vegetables may be at the point of needing water. The wind and sun—"Hot"? "Yes indeed sir,"—sucks up the moisture "right now." A few days delay may mean a lost crop —a delayed pay-day. The farmers out in the shallow water district have found that they can depend on the electrical power more than they can on any other kind. As one farmer said to me, "I can sleep a little better since installing my motor."

Farmers Well Pleased

Farmers expressed themselves freely on the subject of power. Here are some of their statements: "We can irrigate fully one-fifth more crops from a well than we could when we used an engine. It takes less time to start the motor and it runs more steadily." "It costs me about twice as much to pump water out of the Neuces River with an engine as it does with my motor." "I have an automatic float cut-off that shuts down the motor when tank is full. It enables me to use a smaller motor and to pump at night."

The depth of the wells runs from 80 to 100 feet. The water usually rises to within an average of 50 feet of the top and will draw down appreciably while pumping.

Wide Range of Crops

A very wide range of crops are grown, mostly vegetables of course. The main crops are onion, spinach, cabbage and plants. It is estimated that 12,000 acres were put in spinach last year. There are 828 baskets to the car—each basket holds 20 pounds of spinach. Someone has figured out that if these baskets were set side by side there would be a continuous line of spinach extending over 700 miles.

Increase in Plant Growing

Another industry, that is expanding as rapidly as electric pumping is making the water supply dependable, is plant growing. The principal kinds of plants produced are: Onions, cabbages, tomatoes, sweet potato slips, etc. Producers figure about 1,500,000 onion sets or plants to the acre, and about 300 cars were shipped to southern, eastern and northern states and some to Cuba—well over a billion plants that will mature in the backyards of suburban homes had their start by electrical irrigation in Texas.

The pumping demand load starts in seed bed preparation in September, increasing rapidly through October and November, runs at its highest through the

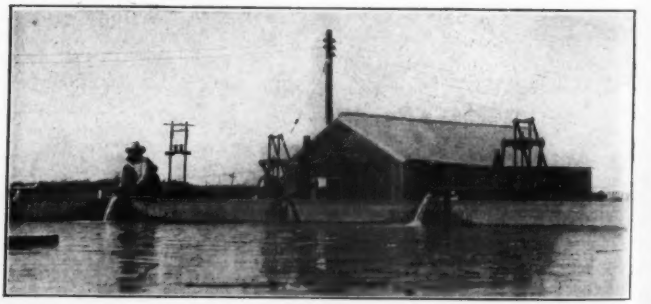
growing period of December and January, declines rapidly through February and picks up during the finishing month of March, declines again during harvesting time of April and May and drops to its lowest point during June, July and August.

Used in Ice Making

Another very important service that electricity is performing is the manufacturing of ice. At Crystal City a 70 ton ice plant is making it possible to ship these fresh vegetables to distant markets in first-class condition. Strange as it may seem, the consumption of ice in this section is greatest during the winter months—much greater in fact than the consumption during the hot months of summer—the reason for this, of course, being the enormous demand for ice to ice the cars previous to shipment of spinach, carrots and other vegetables to northern and eastern markets.

Covered by cactus and mesquite this area has for years been the roaming ground of range cattle, sheep and goats. Its natural advantages are many—wonderfully fertile soil that is friable and easy to work and responds quickly to proper handling—clay subsoil that makes irrigation practical—long days of brilliant sunshine "where the sunshine spends the winter" as they say—high and dry altitude so necessary to the growth of many kinds of crops, and underlaid with an abundance of good water. It has taken two things to bring prosperity and success to this district, industrious, faithful people, and the ever willing, silent electrical power.

A fuse is a piece, or link, of fusible metal introducted into a circuit to protect the apparatus as in the case of an overload. The metal is usually an alloy of lead and antimony and melts at a low temperature. Fuses as commonly used are protected by plug or cartridge containers to prevent the blow-out of molten metal setting fire to adjacent objects.



Electric Motor Running Two Pumps. Note in the Middle Between the Streams of Water the Float of the Automatic Cut-off.

Cutting Ensilage on the Granquist Farm.

At the Farm of Dave Granquist near Shaffer, Minnesota, 5 and 7½ Horse Power Motors Were Used in Test to Determine Their Performance. The Same Size Motors and Layout Were Also Employed on Farms of Charles Bolander and Arthur Bolander Near the Same Town.

Small Motors Economical for Cutting Ensilage

Require Smaller Crew and May Be Operated at Higher Efficiency

BY C. P. WAGNER,
General Rural Service Engineer
Northern States Power Company, Minneapolis, Minn.

ENSILAGE cutting seemed to be one of the things that the farmer desired when electrification came his way, therefore an effort was made to solve this problem in a manner which would be most efficient and economical for the farmer.

First thought was given to a size of motor which would parallel the power of the tractor formerly used for cutting ensilage.

But with a motor of this size it was found that the expense of installation—including transformers and power lines—would be excessive. At the same time a larger crew would be required to keep the cutter in operation with the result that it would be used for a much shorter period than where a small motor was employed. This made necessary much additional help for a short period

and thereby required help to do the greater part of the work.

Thought was then given to the use of smaller size motors such as 7½ or 5 horse power. With the smaller motors a smaller crew is required, and the work is drawn out over a longer period.

This means that the farmer could be a bigger factor in doing the work and he would therefore have to employ much less help than he would in the case of using a big motor with a large cutter. Then, too, the cost of installation was kept down and the motor operated at its full

Illustrating a Very Satisfactory Location of Transformer for Good Operation at the Farm of Emery Johnson on the Redwing Experimental Lines near Redwing, Minnesota.

A Compact Ensilage Cutting Layout.

A Portable 7½ Horse Power Motor is Being Used on Model 81 Papec Ensilage Cutter. This Cutter Operates with 3 Blades at 475 R.P.M. and with 2 Blades at 550 R.P.M. This Layout is Used on the Farm of Walter Franzmeier near Coates, Minnesota.

capacity with resultant high efficiency.

At the present time it appears that 5 and 7½ horse power motors are serving excellently in ensilage cutting work.

In 1926 silos were filled on several farms at Coates station, Minnesota, and included the following:

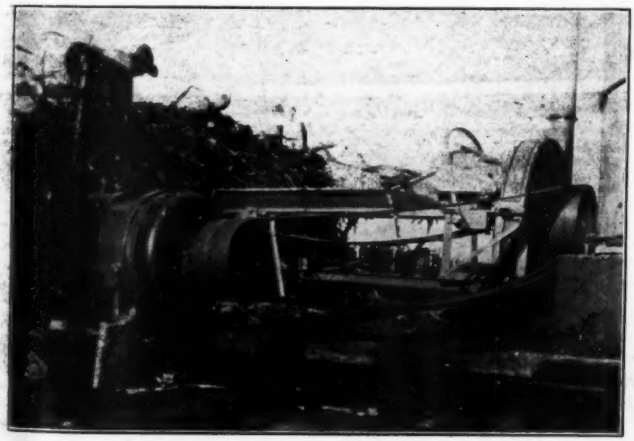
Edmund Knodt, size 14x44 ft. This silo was filled using 96 kilowatt hours of power.

At the farm of Henry Franzmeier, a silo 14x40 feet, another 16x40 and still another 14x38 feet were filled and refilled, using 340 kilowatt hours of current.

Two silos on the farm of Louis Franzmeier, each 13x40 feet, were filled with electric power totalling 142 kilowatt hours.

The machine employed in the above work was a Papec machine, 13 inch, 2 blade, operating at a speed of 650 R.P.M. This speed, it has been found, is too high and that the 7½ horse power motor operates better on this machine with three blades and about 450 R.P.M.

During 1927 a larger number of experiments were made and it has been found that a very satisfactory and cheap job can be done with Papec 16 inch machine operating with 2 blades at about 425 R.P.M. With this combination full feeding can be accomplished, as shown in the illustration herewith. While this machine operating at 400 R.P.M. a 5 horse power motor can



Over Nine Tons of Ensilage Per Hour.

Here is a Rowell No. 113 Trojan, 3 Blade Cutter, Operating at 32 Feet Elevation. A 7½ Horse Power 1200 R.P.M. Motor is Used, and a Cutter is Driven at 450 R.P.M. Approximately Nine Tons, Four Hundred Pounds, of One-Half-Inch Cut Ensilage Is Produced Per Hour.

Cutting Ensilage at the Farm of Nick Erdin near Holdingford, Minnesota.

handle the load if a little care is taken in the handling of the feeding for uniformity. In fact, it was found that the 7½ horse power motor would not average a 5 horse power load but would pull out better with the heavy pulls.

Requirements of Cutter

Rowell Trojan Cutter, shown elsewhere in this article, was used at the Campbell farm, Hopkins, and did an excellent job at 450 R.P.M., three blades and 7½ horse power motor (which was supplied with poor voltage).

Successful cutting can be accomplished with any cutter which will handle the elevation at low speeds and also which will not chop the ensilage into chunks when the knives become dull. There are several cutters on the market which cannot do this, but there are several which will.

Successful operation is dependent on the following conditions, both as to 5 horse power and 7½ horse power operation:

Elevate at low speeds.

Not chunk the ensilage at low speed.

Have the transformer up close to the loads and have adequate wiring on the farm.

Have proper ratios for pulleys to obtain right speed and not have belt slippage on the motor pulley.

Have a belt which is reasonably pliable to maintain a low slippage.

When making a splice in an electric circuit, the wires are first cleaned of insulation, then twisted together in proper manner. The joint is soldered and a layer of rubber tape and after this a layer of friction tape is applied.

* * *

A double-throw switch is a switch which may be thrown to the right or left making contact with two separate sets of clips to cut in either of two circuits represented by the latter.

How to Read the Electric Meter

By V. L. Hein

With a little explanation the average person can easily read the electric meter. The lack of this knowledge on the part of the consumer and the neglect or inability to make satisfactory explanations on the part of

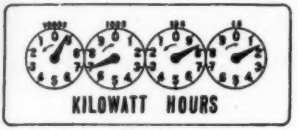


Figure 1.

the electric company, often cause misunderstanding. As the electric meter is located on the consumer's premises he should become familiar with it and check his electric bills as he would check other bills or invoices.

Water and coal are visible and may be readily transferred from one place to another, hence their measurement is easily understood. But with electrical energy the case is different; since it cannot be seen, its measurement is not so well understood. However, time is not visible, yet everyone is able to tell time. The electric meter is as accurate as a watch or clock and no more difficult to read.

In order to become familiar with electrical measurement it is necessary to understand the unit used in measuring electrical energy; the WATT-HOUR. Almost every electrical device employed in the household has the rating in watts, stamped on the name plate. This rating in watts, multiplied by the time in hours that the device is in use, gives the number of watt-hours consumed. The following example illustrates the point: A 40 watt lamp burning for one hour consumes 40 watts of electrical energy, or a 10 watt lamp burning for four hours consumes the same amount. This is further illustrated by the list of domestic devices listed on a following page.

Since the watt-hour is too small for commercial purposes it is multiplied by 1,000 and is called KILOWATT-HOUR. The words—kilowatt-hours—will be found on the dial of every electric meter. The meters are so constructed and adjusted that the dials indicate in this unit the amount of energy consumed.

Reading the Meter

First. The unit in which the meter reads, kilowatt-hours, and

Figure 2.

the way in which the dial is marked should be carefully noted. On some dials, of meters now in use, the first circle on the right has a 1s above it, the next on the left a 10s and so on. See figure 1. Wherever this "s" appears, it signifies that the

number preceding it is the value of each division of that particular circle. Therefore, when the first pointer has made one complete revolution 10 kilowatt-hours of electrical energy have been consumed. During this

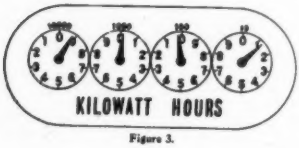


Figure 3.

time the second pointer has moved over to one. When the second pointer has made one complete revolution 100 kilowatt-hours of electrical energy have been consumed, and the third pointer stands on one.

On other meters a 10 will be found above the first circle on the right, above the second, 100, above the third, 1000, and above the fourth, 10000. This marking indicates the value in kilowatt-hours of one complete revolution of the pointer. Still other dials have no marking at all above the circles. On these dials the value of one complete revolution of the first pointer is 10 kilowatt-hours and so on. In figures 1, 3 and 4 the value of each division of the right-hand circle is the same, 1 kilowatt-hour. All new meters now being manufactured have no markings above the circles.

Second. In reading, the direction in which the pointers rotate should be noted. Beginning at the right the first pointer rotates to the right, the second to the left, the third in the same direction as the first, and the fourth in the same direction as the second. See figure 1. The direction of rotation can also be determined by noting the direction of sequence of figures around each circle.

Third. The figure the pointer has last passed is alway read, NOT the figure nearest to the pointer. For instance, if a pointer is between 0 and 1, the 0 is counted; if it is between 3 and 4, the 3 is counted; if between 9 and 0, the 9 is counted. After the direction of rotation of the pointers has been determined the figures are set down as the pointers show them, beginning with the circle on the right. In figure 1, the pointer of the first circle on the right is between 1 and 2, the second pointer is between 8 and 9, the third very nearly indicates 7, yet the second pointer has not reached zero so 6 is the figure to read, and the fourth pointer has just passed 9. The reading

Figure 4.

is therefore 9681 kilowatt-hours. If at any time there is doubt as to which figure to read, the reading of the next circle to the right should be noted. If the pointer in this circle has not reached zero, the figure in question has not been reached and the last figure passed over is the one to read.

Fourth. Some dial readings

must be multiplied by a constant such as 10 or 100 to obtain the true readings. If the dial bears some such notation as "Multiply by 10" or "Mulciply by 100," the reading as indicated by the pointers must be multiplied by 10 or 100 as the case may be, to obtain the true number of kilowatt-hours.

Fifth. Each successive monthly reading does not show the kilowatt-hours used during the past month as the pointers do not start from zero each time. To determine the number of killowatt-hours consumed for a certain period it is necessary to read the dial at the beginning of that period and again at the end. By subtracting the first reading from the second the number of kilowatt-hours consumed during that period is obtained.

In case a meter is over-read the error will be corrected at the next reading as the difference between readings for the second period will be correspondingly small. By keeping a record of each month's reading the amount of energy consumed can be checked and mistakes may be called to the electric company's attention.

Sample Readings

Referring to figure 2 and following directions as previously explained, it will be seen that the first pointer has passed 2, the second has passed 3, the third has passed 7, and pointer four has passed 1, hence the reading is 17320 kilowatt-hours.

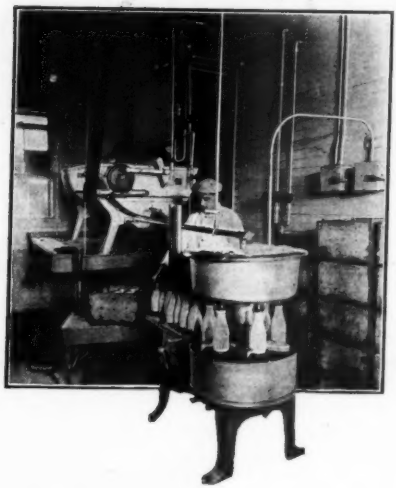
Figure 3 shows that pointer one has passed 1, pointer two has not reached 1, pointer three has not reached 1, and pointer four has passed 9. The reading is therefore 9001 kilowatt-hours.

In figure 4 the pointers give a reading of 3648 kilowatt-hours, but it will be noted that this meter has a multiplying constant of 10, therefore, the reading must be multiplied by 10, giving a reading of 36480 kilowatt-hours.

Domestic Devices

The time required for each of the various standard appliances to consume one kilowatt-hour, under ordinary conditions, is given in the following table:

	Hours
25 Watt Lamp	40
40 Watt Lamp	25
60 Watt Lamp	16⅔
75 Watt Lamp	14⅔
6 lb. Iron (approx.)	1⅔
Grill (average)	1½
Chafing Dish (average)	1¾
Luminous Radiators (average)	1½
Coffee Percolator (av.)	2¾
Vacuum Cleaner (av.)	15
Heating Pad	15
Sewing Machine Motor	20
Curling Iron	60
Washing Machine	8
Vibrator (approx.)	50
Dish Washer (approx.)	9
Toaster	2¾
Ovenette (average)	2½
Fan Motor, 8-in. (approx.)	20
Stove (2 burner) probable average demand	¾
Cake Griddle	1½



Cooling, Stirring, Bottling Milk and Capping the Bottles At the Rate of 20 Bottles Per Minute, On the Sanitary Infant Dairy, Tacoma, Wash., by the Help of Electricity.

Electricity

J. C. Scott

IN the October issue of ELECTRICITY ON THE FARM *appeared the first of two articles dealing with the use of electricity in connection with dairy farms in Washington, by Mr. J. Scott, one of the leaders in the rural electrification movement on the Pacific Coast.*

The following is the second and concluding article and shows how electricity is serving both the small farmer as well as the commercial dairy. In each case the hired help saved by the use of electric current means much to the farmer who is so fortunate as to have the benefits of central station electrical service. While this article, as well as the preceding one, deals with western farms, conditions insofar as dairy farming and dairies are concerned are sufficiently similar to warrant the statement that electricity will serve farmers in other sections of the country with equal benefits.

In the following paragraphs Mr. Scott describes first his visit to a farm owned by Mr. F. F. Joubert which is about a mile out of Enumclaw, Wash.:

Mr. Joubert's farm is known throughout the territory immediately surrounding it as a place where much is accomplished with 15 cows on 20 acres by one man. When asked how he man-

Dairy Herd Belonging to Mr. F. F. Joubert, Enumclaw, Wash.

Labor Saver for the Dairy

Washington Dairies and Dairy Farms Find It a Most Useful Helper; a Real Money-Saver

By J. C. SCOTT

aged to do all his work alone, Mr. Joubert said:

"We have six small electric motors on the ranch and will soon have another. Besides milking the cows, electricity does many other things for us. It pumps the water into a pressure tank, giving us running water all the time, runs the cream separator, the grind stone, the washing machine, machinery in the shop, helps do the ironing and cooking and soon it will supply hot water in the dairy washroom.

Milking Machine Appreciated

"The thing I'm most delighted with is this electric milking machine. It saves appreciable time and besides I'm not tired when the milking is finished. A few cents per day is the cost of electricity to run the machine. No more hand milking for me."

Seldom do we go on to a farm and talk with a farmer without learning something, but to visit Mr. Joubert's place and to see what he is doing and how he is doing it is quite an education in itself.

He accomplishes much with little.

The farm is only 20 acres in size but it produces all the feed, except the grain feed, for 15 head of heavy producing Jersey cows. The manual labor on his farm, including the milking and caring for the cows is practically all done by one man—Mr. Joubert himself.

The F. F. Joubert Farm Near Enumclaw, Wash.

We have a very good explanation of how time and labor in doing the chores has been greatly reduced by employing electricity, but how can feed for 15 milk cows be produced on 20 acres? To do this, Mr. Joubert has some very definite ideas, which have been carefully carried out. Here is what he has to say about it.

"Save the manure and get all its value on to the land. Considerably over half of the plant food is in the liquid. I have a liquid manure pit which catches all liquid manure from the barn. This I pump into a tank and haul out on to the land.

"All of the solid manure is piled under a shed cover until it is scattered on the land.

"Most farmers get only one-quarter value out of their manure. They waste all the liquid, and allow about a half of the remaining value in the solid manure to leach out, by its being piled in the open.

Rotates His Crops

"The next thing in importance is a good cropping system. I follow a four-year rotation, and to carry out this plan the farm is divided into four fields. The rotation starts with oats, and clover seeded with the oats. The second year is clover hay, and the third year pasture. Then the pasture is plowed up and corn planted the fourth year.

"Last year I raised as much corn as I did eight years ago on the same ground, so my farm is keeping up in fertility."

To crop a farm for years and then leave the land as fertile as it was to begin with, is one of the greatest accomplishments any man can strive for.

Tacoma Dairy

Anyone who is looking for ways of actually saving time, drudgery, cutting down costs of operation, and at the same time producing better and cleaner milk, will be interested in learning something of how things are done at the Sanitary Infant Dairy which is located close to Tacoma, Washington. This is one of the dairies that furnishes milk to the city of Tacoma.

In the first place, they have a great plenty of water on tap everywhere about the barns and

milk house, which is pumped by an electric motor. When the milk is brought into the milk house, it is put over a milk cooler which is kept cool by a brine running through the cooler. This is a part of the brine of the electric refrigerator, in which the milk is kept cool after going over the cooler. In most dairies the temperature of the milk is brought down only to about 60° F., which, according to many health authorities, is not as low as it should be. The colder the milk, the more retarded is germ development. The milk in the Sanitary Infant Dairy should be as nearly free from disease germs as coldness can make it, because the cooler was actually covered with frozen milk when I saw it in operation.

After the milk goes over the cooler and into a vat, it is continually stirred and mixed by electric driven machinery until it is bottled.

Filling and Capping

The bottles are filled with milk and the caps put on the tops of the bottles by the electric driven machine, shown in the accompanying picture. This operation is done as fast as a man can put the empty bottles in place and put the filled ones into the case.

According to Mr. Edwin Kuenzli, foreman of the milk house of the Sanitary Infant Dairy, who is shown in the accompanying picture, it took them six hours to fill and cap 1,200 bottles of milk by hand, which he now does, with the help of the machine, in one hour.

Left: Mr. Joubert Has Not Yet Been Able to Use Electricity in Cultivating His Field—and That's Why You See Him Here Resting On His Hoe Between Rows: Above: Inexpensive Pump House On the Joubert Farm.

"We were surprised when we first installed the electric bottler," said Mr. Kuenzli, "because it seemed that we had no work to do any more at all."

After the milk is bottled and put into cases, it is then put into the electric refrigerator, and kept cool until it is taken to the city of Tacoma where it is distributed.

When the empty bottles come back, electricity comes in to play again, in saving time, labor, drudgery and cost of operating the dairy. With the help of an electric driven bottle washer and sterilizer, two men actually wash and sterilize 48 bottles per minute. I asked Mr. Kuenzli how long it would take two men to wash 48 bottles by hand, and he said:

"I have no way of knowing, because it would take so long to wash our 2,000 or more bottles that we would never get through; but with this washer we do the job and sterilize them, too, in less than an hour.

Uses Seven Motors

"We have seven electric motors on the farm," Mr. Kuenzli told me. "Besides the motors used to take care of the milk and milk utensils, we use electric motors to run the machinery in the farm shop, also the corn and feed cutter, and many other things."

We are just beginning to learn

Bottling Milk and Capping the Bottles by Electric Machinery, At the Rate of 20 Bottles Per Minute, Sanitary Infant Dairy, Tacoma, Wash.

of a few of the possible ways that electricity can help the farmer in his efforts to get the farm on a better paying basis. The Sanitary Infant Dairy is setting the example along this line, in many respects.

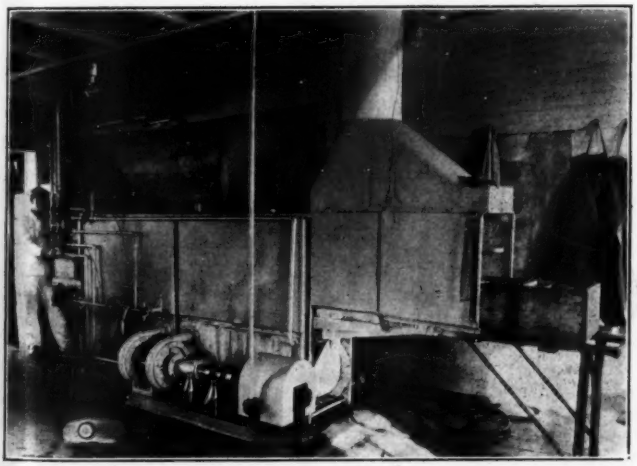
In talking with Mr. J. W. Kalkus, Superintendent of the Western Experiment Farm, Puyallup, Washington, about milking cows with electric milking machines recently, he said, "We have been milking here at the Experiment Station by machines for several years without any ill effects whatsoever upon the cows. Neither do we have any trouble in keeping the bacteria count down in our milk, on account of using machines. The milk can be kept pure and sanitary if the milking machines are kept clean and sterilized properly. However, *proper sterilization will not relieve one of the necessity of properly washing the machine.*"

Electricity Helps Eastern Farmers

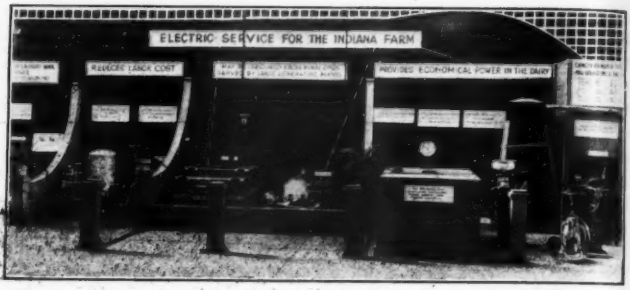
(*Continued from page* 14)

dustrial people buy, for cash, all of the milk, eggs, fruit, etc., that he can raise and often come to the farm for these products. He is unable to hire help so he had turned to mechanical and electrical equipment. He used a private electrical plant until June, 1927, when he tapped the high line. For about 12 years Mr. Poorbough has used an electric milking machine. He

(*Concluded on page* 36)



Washing and Sterilizing 48 Milk Bottles Per Minute At the Sanitary Infant Dairy, Tacoma, Wash., by Electricity.



Interesting Section of the Exhibit at the Indiana State Fair

In the Center May Be Seen a Miniature Power Plant and a Layout of Farm Buildings. At the Left is Shown the Water System While at the Right May Be Seen Milk Cooling Tanks, Separator, and a Feed Grinding Plant.

Demonstrations Show Use of Electricity on Farms

Power Companies and Colleges Co-Operate in Demonstrating Proven Uses for Electric Power in Farming

MANY of the leading power companies and agricultural colleges throughout the country avail themselves of every opportunity to stage exhibits of farm equipment operated by electric power. Primarily the function of these exhibits is to show the farmer just what electricity can do and how it is applied to their power problems.

The problem of informing the farmer on the use of electricity, says R. Boonstra, Agricultural Engineer of the Public Service Company of Northern Illinois, is chiefly a local one, because of the variety of agricultural products raised in each territory. It is, therefore, necessary to exhibit electrical equipment particularly adaptable to the kind of farming practical in each community.

An illustration on a later page shows the application of electricity to chick raising exhibited in a poultry raising community. The electric brooder shown takes care of 200 chicks. They are treated with ultra-violet rays from a Unviare Cooper-Hewitt lamp. An experienced poultry man, popular and well-known in the community, was on hand to advise on all problems connected with the raising of poultry.

This exhibit was crowded from morning to night by interested farmers.

As noted on the sign, this exhibit was put on by the Public Service Company of Northern Illinois. This company also put on a fair exhibit in a dairy feeding territory, as shown elsewhere in this article. Success of this display is largely due to the popularity of the implement dealers and one local dairy farmer who co-operated with the Public Service Company in exhibiting machinery operated by electricity. Working with the local dealers in this manner has created good-will and has resulted in full co-operation on all sides.

An Elaborate Indiana Display

In the following paragraphs Mr. Truman E. Hinton, Assistant in Agricultural Engineering at the Agricultural Service Station, Purdue University, describes a very elaborate display staged by Purdue University.

Electric service for the Indiana farm and farm home was the title of an exhibit in the Purdue educational exhibit building at the recent Indiana State Fair held at Indianapolis, September 3rd to 10th. The source of electric service, methods of providing it at the farm and some of the more important uses on the farm were shown. The entire exhibit occupied three walls of a room 30 feet by 60 feet and about 1200 square feet of floor space.

Power Plant Displayed

A miniature generating station showed the source of electric power for the farm. Through a step-up transformer it fed a rural electric line passing along a miniature highway. A set of miniature farm buildings represented the Indiana farm served from this rural electric line. Uses of electric service on the

Farm Home Display of Purdue University.

The Home Equipment Display of the Purdue Exhibit Proved Very Popular. In It Were Shown Various Labor Saving Appliances Utilized Around the Farm Home.

farm were divided into four sections, the home, dairy, poultry and general work. Twenty-two articles of electrical equipment showing seventeen important practical uses of electric service on the farm were demonstrated in these various divisions of the exhibit.

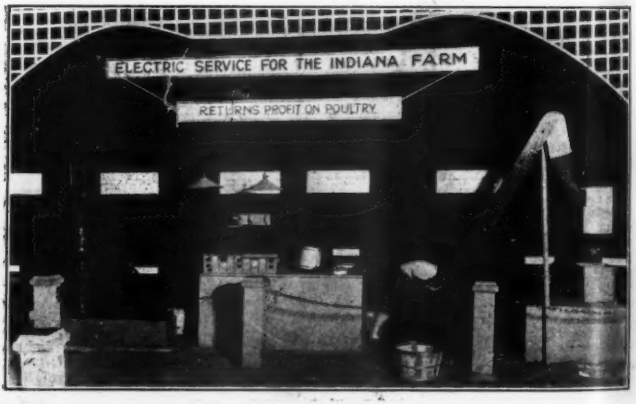
Attracted Much Attention

The use of electric service in the farm home attracted the attention of the farmers' wives passing the exhibit. Cooking, refrigeration, washing, ironing, cleaning, water pumping and food mixing electrical equipment brought forth a wish from many lips that the day was not far distant when electric service would be extended to their homes. A corps of five farm girls under the direction of Marian Rapp and Kathryne McMahon of Purdue demonstrated this equipment throughout the fair. The time and temperature controls on the ovens of the two electric ranges created many favorable comments from farm women interested in electric cooking.

Interest in Portable Motor

A portable ¼ H.P. motor driving a grindstone and an automatic shallow well water system were of almost universal interest not only to men but to women as well. The advantage of having a motor mounted on legs which could be moved about the farm to equipment used a few hours a week or few days a year appealed to a great many as an economical source of power.

Electrical equipment for the dairy farmer shown in the ex-



Purdue Display of Poultry Apparatus

In a Portion of the Exhibit at the Indiana State Fair Shown Above Purdue University Had On Display An Electrically Driven Pump, Electrically Lighted Poultry Houses, Water Heater and Corn Sheller.

Fair Exhibit Staged by the Public Service Company of Northern Illinois, Showing the Many Farm Appliances Which are Satisfactorily Operated by Electric Current.—Here May be Seen the Milking Machine, Pressure Water System, Plumbing Equipment, Portable Motor, Refrigerator and Other Equipment.

hibit consisted of an electric milking machine, motor driven cream separator, direct connected two H.P. hammer type feed grinder and an electrically cooled milk storage tank with capacity to cool and store six ten gallon cans of milk.

A Poultry Exhibit Which Attracted Considerable Attention. Arranged by the Public Service Company of Northern Illinois.—A Display of Live Chicks Added to the Interest Shown.

One hundred bushels of oats were ground during the fair with the grinder for demonstration purposes. A recording thermometer mounted on the top of the cooling tank showed that a temperature of 40° in a milk cooling tank is entirely possible with electric refrigerators.

Electric incubators, water heaters, simple switch and reflectors for poultry house lighting, pump jack and an installation using a one H.P. motor to shell or grind served to convince the poultryman of the use of electric service on the poultry farm. The motor was mounted between the sheller and small burr grinder. An elevator from the sheller delivered the shelled corn into a hopper over the grinder. Fifty bushels of corn were shelled and ground with this outfit.

A large amount of interest was shown in all uses of electric service on the farm. However, electric cooking and refrigeration seemed to be of greatest importance to the farm woman. The electric pump jack and small hammer feed grinder were of greatest interest to the men. The very real interest evidenced in all of the uses shown in the exhibit indicate that Indiana farmers and their wives are ready for electric service.

Electric "Sun" Enjoyed by Cows and Hens

Cows love to stand in their stanchions on cold winter days and bask in violet rays from an electrical apparatus over them. Hens rush into the room where the rays are disseminated, ruffling up their feathers as though they were locating a nice, soft pile of dry dust. The United States Department of Agriculture has taken notice of these facts. Dr. E. W. Allen, chief of the Department's experiment stations, says that not only do cows and hens like it but the treatment makes the quality of the milk and eggs much better and that babies fed such milk are practically immune to rickets. The violet ray method of improving farm output is approved by the government and is being adopted on more farms each year. Dr. Allen says: "Nobody knows why a little sunshine or its substitute, an electric ray, playing over the backs of cows and hens results in better milk and more fertile eggs, but it is so."

Electricity Helps Eastern Farmers

(*Continued from page 31*)

expects now to put in an electric milk cooler and all other electrical apparatus which he finds economical. This man is no novice at farming. He worked as a farm hand, then rented a farm and in 1910 bought the place he is now on, and he has succeeded in a big way.

Numerous examples could be pointed out where farmers in Pennsylvania are finding electric current a wonderful investment, if space were available.

Kelvin—is used in Great Britain as a unit of energy, in honor of the great Lord Kelvin.

This Practice Will Pay For the Electricity on Your Farm

Clipped cows give more milk, cleaner milk and better milk and yield a larger net profit. Clipping saves endless grooming. Keeps cows skin in healthy condition. Because contented and comfortable they give more and better milk.

Authorities Point to Clipping of Milk Cows as a Necessary Practice on Up-to-Date Dairy Farms

Most of the dirt in the milk drops from the cow into the bucket. Clipping stops this. Once in the milk, bacteria cannot be strained out. Keep them out by keeping your cows thoroughly cleaned by clipping. Then, they are cleaned by simply wiping with a damp cloth.

The Stewart Electric Clipping Machine

The Stewart Electric Clipping Machine quickly pays for itself in added milk profits. Easy to use. Clips fast. Makes better animals of your cows, horses and mules. Can be had in Pedestal or Overhead types. Easily moved about and plugged in on any electric light socket.

We are the world's largest makers of clipping and shearing machines. Write for our complete illustrated catalog which describes both hand operated and power driven clipping and shearing machines. No obligation on your part.

CHICAGO FLEXIBLE SHAFT COMPANY

5524 Roosevelt Road, Chicago

38 Years Making Quality Products

Making the Farm Motor Portable

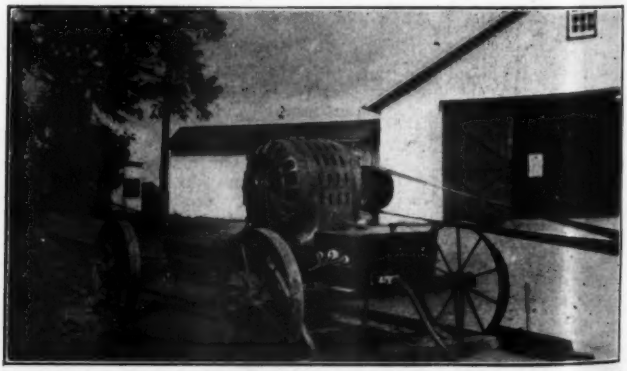
By THOS. H. WITTKORN

MOVING a large motor from one job to another on Longwood Farms, Kennett Square, Pennsylvania, has been solved by the manager, Douglas Gilpin. He mounted it on the running gears of a low steel wheel wagon. Steel sills were used from front to rear and the base of the motor, with wooden blocks between, was bolted to them.

This motor annually fills three silos, grinds practically all the feed for 45 dairy cows and 100 steers and fines about ten tons of tankage to mix with acid phosphate for fertilizer. A team of horses can now move it where wanted at a great deal less cost and effort than moving and setting up the gasoline tractor formerly used.

When there is a wait between loads, due to a long haul, the motor proves economical in being easy to start and stop. In four days 193 large two horse loads of corn were put into the silo and the meter showed 470 kws. consumption. The wear and tear, Mr. Gilpin figures, is not one-tenth that of a tractor and he has the advantage of available power any time of day or night, winter or summer. —*Thos. H. Wittkorn.*

The three most commonly employed "systems" of wiring at the present time are: BX, open wiring and conduit. BX is a flexible metal-sheathed cable (usually containing two or three wires) and leads in use in cities. Open wiring is a cheaper installation but is neither as secure or safe as is BX. Conduit, or pipe wiring is the most expensive of the three but makes the best job. When properly installed, it is waterproof, very secure, and stands the test of time better than do the other systems.



How Motor Is Mounted on Running Gear of Low Steel-Wheeled Wagon at Longwood Farms

Equipped with Electric Motor

NEW Low Model MELOTTE

30 days FREE TRIAL

NOW!—for the first time—the farmers of America have a chance—if they act quick!—to see and USE, on 30 Days Free Trial, the NEW Low Model Belgian Melotte Cream Separator.

This great NEW Low Model Melotte retains ALL the best features of the regular Melotte, the World's Leading Separator, including the famous self-Balancing Melotte Bowl that NEVER gets out of balance and ALWAYS skims perfectly—*plus*—many big NEW features that give you greater convenience and MORE all-round separator satisfaction than has ever been known before.

If you have electric power be sure to get the model equipped with electric power; if not get the regular model—you can easily add this motor equipment as soon as you're ready. Send for big Free NEW Melotte Catalog Now!

$7.50 a Month

Remember—you have a 30 Days Free Trial—absolutely free, and with NO obligation to buy. Then, after the free trial—*you suit your own convenience about payments*.....cash, if you prefer.....OR.....pay only $7.50 down and only $7.50 a month.....NO interest charges.....NO financing charges.....NO extra charges of any kind. Fill in—cut out—mail the coupon below now—before you lay this paper down. This will not obligate you to buy anything—BUT—will bring you the most wonderful separator news you have ever heard.

Ball Bearings

of course the NEW Melotte Separator has Ball Bearings. The Melotte separator has always had ball bearings. It has had ball bearings

for 40 Years

Mail This Coupon Now for Free Book

The Melotte Separator, H. B. BABSON, U. S. Manager
2843 W. 19th St., Dept. 95-67, Chicago, Ill.
2445 Prince St., Berkeley, Calif.

Please send me at once full details about the NEW Low Model Melotte Cream Separator, your Special Low Introductory Price to first buyers, and your $7.50 offer after 30 Days' Free Trial.
(Print Your Name and Address plainly)

Name .....

Post Office .....R.F.D.....

State .....Have you electricity?.....How many cows do you milk?.....

MILKING MACHINE Yes, we have a milker which is bound to interest you—Melotte quality—reasonably priced—terms. Check here if interested. ☐

Sparks and Chaff

Strategy

"If you kiss me again, I shall tell father."

"That's an old tale. Anyway. it's worth it," and he kissed her.

She sprang to her feet. "I shall tell father," she said, and left the room.

"Father," she said softly to her parent when she got outside, "Mr. Bolder wants to see your new gun."

"All right, I'll take it in to him," and two minutes later father appeared in the doorway with his gun in his hand.

There was a crash of breaking glass as Mr. Bolder dived through the window, and he has not been seen since.

* * *

Perjury

Pat was arrested for being intoxicated. On being brought before the Judge he was asked by the Court what he was there for.

Pat: "Your Honor, I was arrested for being intoxicated."

Judge: "Pat, where did you buy the liquor?"

Pat: "Your Honor, I did not buy it. A Scotchman gave it to me."

Judge: "Thirty days for perjury."

* * *

Farmer—"Why aren't you busy?" Can't you find something to do?"

Hired boy—"Gee whiz! Have I gotta hunt up work and then do it, too?"

* * *

Junkman: "Any rags, paper, old iron?"

Man of the House (angrily): "No, my wife's away."

Junkman: "Any bottles?"

Radio "Fans"

Dear Old Lady (to shop-walker)—"I want to buy one of those wireless fans I read so much about; my room gets so frightfully stuffy." —*Tit-Bits.*

* * *

"According to a naturalist," says a London paper, "there is a fish that washes its young." But how in the world are the little ones dried? —*Boston Transcript.*

* * *

Courtesy Pennsylvania Farmer

Hoisting Problem: "So the Browns have had a disagreement and separated. What was it about?"

"She wanted to have her face lifted and he insisted that it be the mortgage."—*Boston Transcript.*

* * *

Sign in a store window: "Bulbs of all kinds—hyacinth, Chinese lily, narcissus, electric light."

* * *

Getting the baby to sleep is the hardest when she is about 18 years old.

NO cow can be healthy and yield a maximum supply of good milk if she is housed in a barn that's full of foul odors and acids that come from manure and excretions.

The ILG Farm Barn Electric Ventilator thoroughly drains the barn of bad air. It is electrically operated—drives out unhealthy odors and heavy atmosphere—the poisonous air that seriously affects the milk yield of every cow.

Get More Milk from Healthier Cows with an ILG

FARM BARN *ELECTRIC* VENTILATOR

The ILG Farm Barn Electric Ventilator provides correct ventilation from a scientific standpoint. It's the most economical method you can install; and, remember, dairy experts agree that *fresh air is two-thirds of a cow's ration.* It makes her ambitious to eat heartily, grow healthy and yield more and better milk—keeps the hay and grain sweet and fresh and makes the whole cowbarn invigorating and healthful.

The ILG Farm Barn Electric Ventilator is easily installed—requires no expensive or complicated flues or ducts. Made for all currents.

A new illustrated bulletin will be sent you free if you send us the name of your Dealer

ILG ELECTRIC VENTILATING CO.

2839 North Crawford Ave. - Chicago, Ill.

HIGH GRADE EFFICIENT ILG VENTILATING MACHINES

Ventilation

For Offices, Stores, Factories, Farm Buildings, Theatres, Restaurants, Homes, etc.

Household Hints

Some Timely and Interesting Suggestions of Value to the Farm Housewife.

Prolonging the Life of Your Electric Washer

BY SALLY E. DAVIDSON

Prolonging the life of an electric washer is no more difficult than prolonging your own life, or the life of anything that is dependent upon good care. But good care is, after all, only a relative term. What one may consider good is not necessarily the "best good."

For example, during my absence from home the girl I left in charge thought she took good care of my electric washer. But I noticed a peculiar lint-like substance adhering to some of my linen and despite her protestations I went to the wash house on tour of inspection.

Running my hand lightly over the inside wall of the washer I brought up enough sediment to justify the thought that the washer had not been properly cleaned.

Rinse the Washer

She protested when I accused her of not keeping it properly cleaned.

"Why, I rinsed it every time I used it," she told me.

"Perhaps you did rinse it but certainly you did not wipe it out," I replied, and immediately set about cleaning the inside of the washer. And let me say here that it is utterly useless to oil and keep the moving parts of the washer in good condition if the inside is neglected. For it is inside of the washer that the clothes must be washed. And they cannot be washed satisfactorily if that is pasted over with a coating of grease and soap.

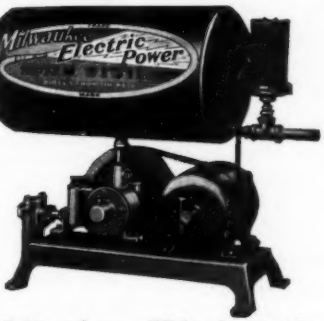
How to Clean It

There is only one way to restore a washer that has been permitted to gather washing grease and that is by hard work. First of all the walls, the cylinder—if you have one—and other parts must be scrubbed with soap and hot water, and when this is done soak a soft cloth in turpentine and remove the rest. Finally polish the inside with steel wool, rinse with hot water and dry thoroughly. Thereafter you will need only to rinse the washer with hot water after each washing and wipe the washer absolutely dry. If this is not possible leave it open for some time so that the air will do what you cannot.

The Wringer

The wringer should also be treated with good care after each washing, and the rubber must not become stained or discolored. In our house the

Electric Water Systems



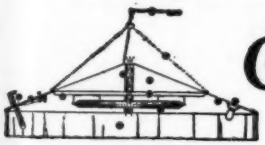
Suction Plants

Pump Jacks

$75.00 and up. Write for catalog.

Milwaukee Air Power Pump Co.
8-10-12 Keefe Ave., Milwaukee, Wis.

Poultrymen Are Buying



SMITH BROS.

Electric Brooder

BECAUSE

It's the easiest, safest, simplest brooder yet designed. Needs no attention; once started it automatically regulates itself. Maintains the desired temperature day or night without any attention. No fire hazard; no worries; no fueling; no dust or ashes. It is clean, sanitary and safe.

LOW PRICES—BIG VALUE

24 in. (100 chicks)	$12.00
32 in. (200 chicks)	16.00
42 in. (350 chicks)	20.00
56 in. (600 chicks)	24.00
72 in. (1000 chicks)	36.00

Write for complete circular—It's FREE

Information on wattage, current consumption and installation will gladly be sent to those who make request.

Electricity is only as useful as you make it. If you intend brooding chicks—do it electrically. Install a Smith Brothers' Electric Brooder or as many as are needed and "push the button." You will wonder why you didn't do so before.

WELLINGTON J. SMITH COMPANY
600 DAVIS-FARLEY BLDG. CLEVELAND, OHIO
Exclusive Sales Agents for Petersime Electric Incubators

wringer after each washing is first rubbed off with a well-soaped cloth, and then with another cloth soaked in turpentine. This removes all stains and grease while another washing with soap and water will keep the rubber rolls in perfect condition.

Always release the wringer as soon as you are through using it, for otherwise useless strain is imposed upon it which eventually wears out the rubber rolls.

Cleaning the Cleaner

Cleaning the cleaner sounds paradoxical, but as a matter of cold fact it contains the secret of prolonging the life and use of any electric cleaner.

I have known women who loved their cleaner and regarded it as an indispenssable household necessity, but who left it choked with dust—and shrieking for oil, while they continued sublimely on, expecting it to do its work as well as ever.

The Cleaner's Need

This, of course, it does not, and never will until its needs are satisfied. To form a habit of cleaning and oiling the electric cleaner regularly is, therefore, very desirable. This is one instance where habit is a Godsend.

My Own Experience

My own experience was enlightening to say the least. For having ruthlessly worn out my first cleaner and having been told so in no uncertain terms by my better and bigger half, I determined that the second cleaner would last me as long as I was able to push it around.

It is now five years old and except for inevitable signs of handling, it looks and works like new. I quickly developed the habit of removing the bag regularly, of emptying it carefully into an ash can, turning it inside out and hanging it out so the wind could finish dusting it for me—which it does remarkably well—before I returned it to the cleaner.

The brushes, too, are frefrequently removed and cleaned and once a month the brushes are washed. The oiling and greasing is done regularly every month. The result is a perfect-running cleaner. The suction never varies and is always strong, while the motor hums merrily on as if enjoying its own activity.

A quick and effective way to clean the brushes is to remove them from the nozzle while the bag is still attached to the cleaner and use the suction of the cleaner on them. I do this also with my dust mop, for I dislike to shake it out of the window or in the backyard. It seems inevitable that the loose dust will promptly return inside the house.

Flexible cord is an electric cord made up of a number of fine copper wires twisted together to form the equivalent of a larger size, as No. 18 cord is the equivalent of No. 18 wire. Two of the conductors thus formed are twisted together, each being insulated with rubber and cotton or silk.

Why You Need Running Water On Your Farm

3.

Safeguards Health

▽

EXPOSURE to a wintry blast, chilling winds and cold rains, while carrying water from an outside pump, often means dangerous colds or pneumonia.

You can avoid these risks and safeguard your family's health by pumping running water into your home with a Golds Electric Autowater System.

Autowater Outfit W-210

While the first cost of these outfits is low, they can, if desired, be purchased on our convenient time payment plan. The operating cost is almost negligible.

Your local power company will be glad to give you information regarding Goulds Autowater Systems. Or send direct for catalog 15EN.

Goulds Pumps, Inc.
Seneca Falls, N. Y.

The Extra Heat That Assures Comfort

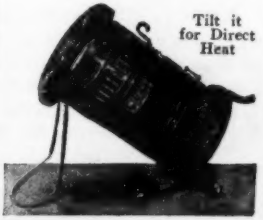
Early morning or late night chilliness vanishes when the "Utica" starts its circulation of heated air through the Bedroom, Bathroom, Kitchen or in fact any place where "Extra Heat" is needed.

The "Utica" heats by circulating warm air, exactly like a miniature warm air furnace. Absolutely safe, nothing to fill, spill or explode. Clean and odorless—sides and base always cool to the touch—these are important features to be considered in buying any auxiliary heater, and they can all be found in the "Utica."

The "Utica" is made in two models—Single Heat and Three Heat. They will be found valuable in home, camp or office—wherever there is electricity. Both models are Duco finished in Antique Gold. Your Lighting Company can supply you.

Utica Products, Inc.
Dept. E. Utica, N. Y.

UTICA
ELECTRIC PORTABLE FURNACE



Tilt it for Direct Heat

strikes a circuit in which a lightning arrester is placed, the lightning jumps the gap and goes to ground instead of going through the wiring circuit and finding a ground by other means. It might well be termed "lightning rod" of a wiring system.

A lightning rod, on the other hand, is a pointed copper or other metal rod projecting several feet above the roof of a building to attract lightning discharges and lead them into the ground. To protect buildings effectively, a number of rods are used on the most elevated parts of the roof, all being connected together and to a ground connection which must be carried deep enough into the earth to insure its being in contact with moist soil at all times. Lightning, choosing the easiest path to the ground, follows down the lightning rod instead of passing through the house itself, and thus avoids doing damage.

Spray Irrigation

(*Continued from page 9*)

number of modifications of the system, but in all cases the water is applied in the form of small drops or spray.

It is necessary that the water be supplied to the pipes under pressure, 15 pounds per square inch at the nozzles. This calls for a pumping plant to lift the water from the well, stream or other source of supply and force it through the nozzles at the required pressure. Both double-acting plunger pumps and centrifugal pumps are used. The bulletin gives detailed information regarding the securing of a water supply, the equipment needed and the methods of installing it. As far as possible, data as to the cost of the equipment required are also given

Spray irrigation has been profitable in many instances, but no attempt is made in this bulletin to state what profits have been realized or what profits a prospective irrigator may expect to obtain. Irrigation does not increase the value of all crops sufficiently to give a reasonable profit on the cost of installation, operation, and upkeep of the equipment. In order to show a profit the value of the crop must be increased sufficiently to pay (1) the cost of producing and marketing the increased yield, (2) the cost of operating the irrigation system (3) repairs (4) depreciation and (5) a reasonable interest charge on the original cost of the system.

Five countries have contributed basic words to the language of electricity and so have brought into universal use the names of their citizens who have contributed to the electrical art. They are: Watt, Ohm, Volt, Ampere and Kelvin. None of these is of American origin, but without the inventive, industrial and commercial genius of Thomas A. Edison, their names would not be so famous today.

An annunciator is a device consisting of several electro magnets, the operation of which releases an "annunciator drop" showing the location from which the call or signal has been sent, accompanied by the ring of a bell or buzzer which forms a part of the annunciator and is connected in series with all of the drops.